REMARKS

The present Amendment is in response to the Office Action having a mailing date of May 27, 2004. Claims 1-53 are pending in the present Application. Claims 1-4, 28, 38-53 are rejected. Claims 5-27 and 29-37 are objected to. Claims 5, 10, 29, 39-49, 52-53 have been amended to overcome Examiner's objections. Claims 1-4, 28, 38 and 50-51 have been cancelled. Consequently, claims 5-27, 29-37, 39-49 and 52-53 remain pending in the present application.

Drawings

The Examiner states,

1. Figure 1 should be designated by a legend such as –Prior Art—because only that which is old is illustrated. See MPEP 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Figure 1 has been corrected in accordance with Examiner's instructions. The legend – Prior Art—has been added to the drawing.

Claim Objections

The Examiner states,

2. Claims are objected to because of the following informalities:
In claim 53, line 6, it appears that "replacement order generator" should be changed to --and a replacement order generator--.

Claim 53 has been amended in accordance with Examiner's instructions.

Claim Rejections-35 USC 102

The Examiner states,

4. Claim 53 is rejected under 35 U.S.C. 102(e) as being anticipated by Supnet (US6,571,317.

As per claim 53, discloses a method for providing a replacement mechanism in a caching device comprising the steps of: (a) providing at least one replacement order list with N partitions *[4-way set associative; LRU data is stored for each set which orders the ways;* col. 5, line 50-col. 6, line 24]; and (b) arranging the at least one replacement order list with a first to replace position at one end and a last to replace position at an opposite end *[the ways are ordered from most recently used to least recently used;* col. 6, line 15-24; *an entry occupies a position within the order from first to be replaced to last to be replaced;* col. 7, lines 48-64; col. 8, lines 45-52], each position containing a way number *[way0-way3;* col. 7, lines 1-5], Nway comparators *[comparators 46;* /Fig. 2; col. 5, lines 62-63], a control unit *control circuit 48;* Fig. 2; col. 5, lines 62-63], replacement order generator *[encoding of the value indicates the position of a way within the order;* col. 8, lines 42-52].

Applicant respectfully disagrees. Claim 53 is reproduced in its entirety hereinbelow.

53. A method for providing a replacement mechanism in a caching device comprising the steps of:

(a) providing at least one replacement order list with N partitions; and

(b) arranging the at least one replacement order list of each of the N partitions with a first to replace position at one end and a last to replace position at an opposite end, each position containing a way number, Nway comparators, a control unit, and a replacement order generator.

Referring to page 12, lines 8-12, of the specification:

"Using our approach, the same partitions X, Y, and Z could consist of any set of two, four, and two ways, respectively. Which ways are assigned to each partition in each set would depend on the states of each of the replacement order lists when the partitions were defined. That is, the partition X could actually consist of, for example, ways 2 and 3 in one set but ways 3 and 7 in another set."

Providing a replacement order list with N partitions and arranging the list utilizing the partitions is a critical part of the invention as shown in the above cited paragraph.

Applicant submits therefore that Supnet does not teach the means nor methods of

arranging with N partitions with replacement mechanism. Accordingly, claim 53 is allowable.

Claim Rejections – 35 USC 103

The Examiner states.

As per claims 39 and 52, Supnet discloses a control unit implemented using random access memory or reprogrammable logic array [col. 10, lines 27-34].

Applicant respectfully disagrees. Claim 52 is reproduced in its entirety hereinunder.

52. (currently amended) A data processing system adapted to include a caching device; the caching device comprising:

at least one replacement order list with N positions, the at least one replacement order list arranged with a first-to-replace position at one end and a last-to-replace position at the opposite end, each position containing a way number, N way comparators, a control unit, the control unit being implemented using random access memory or reprogrammable logic array, a replacement order generator, and receiving a hit signal and, in case of a hit, a hit way number;

the replacement order generator consisting of N position selectors, each selector having the way number from each of the N positions as inputs.

Supnet discloses a control unit implemented "for" controlling random access memory and not "implemented using" random access memory or reprogrammable logic array, as recited in claim 52. Accordingly, claim 52 is allowable.

Allowable Subject Matter

The Examiner states,

11. Claims 5-27 and 29-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

(a) As per claim 5, the prior art of record does not teach or suggest "the position selector for the last-to-replace position has the hit way number and the replace way number as inputs and the position selectors for the other positions have its own way number and a replace-later adjacent way number from its adjacent position toward the last-to-replace position as inputs" in combination with the other elements set forth in the claimed invention. Therefore, dependent claims 6-9 are allowable as being dependent upon dependent claim 5 and having additional allowable features therein.

(b) As per claim 10, the prior art of record does not teach or suggest "the at least one replacement order list is divided into one or more partitions with each partition arranged with the first-to-replace position at one end and the last-to-replace position at the opposite end of the partition, and the control unit receiving a reference ID indicating a reference partition" in combination with the other elements set forth in the claimed invention. Therefore, dependent claims 11-27 are allowable as being dependent upon dependent claim 10 and having additional allowable features therein.

(c) As per claim 29, the prior art of record does not teach or suggest "the at least one replacement order list is divided into unlocked and locked partitions, with the unlocked partition arranged with the first-to-replace partition, and the lock register indicating the number of positions in the locked partition" in combination with the other elements set forth in the claimed invention. Therefore, dependent claims 30-37 are allowable as being dependent upon dependent claim 29 and having additional allowable features therein.

Applicant appreciates Examiner's indication that claims 5-27 and 29-37 would be allowable if amended. Claims 5, 10 and 29 have been rewritten in independent form in accordance with Examiner's suggestion. Claims 39-49 are allowable since they depend upon allowable base claims.

Accordingly, Applicant respectfully submits that claims 5-27, 29-37, 39-49, and 52-53 are now all in allowable form. Consequently, allowance and passage to issue of claims 5-27, 39-49, and 52-53 of the present application are respectfully requested.

Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

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Date

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